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10/743,329	12/23/2003	Tomomi Sano	50212-560	5585

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EXAMINER

MOONEY, MICHAEL P

ART UNIT PAPER NUMBER

2883

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Please find below and/or attached an Office communication concerning this application or proceeding.

PN

<b>Office Action Summary</b>	<b>Application No.</b> 10/743,329	<b>Applicant(s)</b> SANO ET AL	
	<b>Examiner</b> Michael P. Mooney	<b>Art Unit</b> 2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 November 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2,3 and 5-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2,3,6-10 and 12-15 is/are rejected.
- 7) ☒ Claim(s) 5 and 11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Specification***

Applicant is advised that two versions of the Specification are shown in the Patent Application Information Retrieval system, one on 6/4/04 and another on 12/23/03. The 12/23/03 version seems to be the more refined version but it has an earlier mailing date.

In response to this Office action, Applicant is requested to go on record stating that the Official version of the Specification is the 12/23/03 version and not the 6/4/04 version. If Applicant does not go on record stating that the Official version of the Specification is the 12/23/03 version and not the 6/4/04 version, then the Applicant is required to update the 6/4/04 version of the Specification to the acceptable format guidelines/requirements of the Office in response to this Office action.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical

Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

**Claims 6, 9, 10, 2 are rejected under 35 U.S.C. 102e as being anticipated by Helin et al. (6711321).**

Helin et al. teaches an optical switching device (e.g., fig. 1) comprising a plurality of input/output ports for inputting/outputting optical signals, and switching means for switching between input/output optical paths of the input/output ports (e.g., figs. 1-3, 15); wherein the switching means switches between input/output optical paths of the input/output ports so as to keep an optical signal led to any of the plurality of input/output ports from traversing other input/output ports (e.g., figs. 1-3, 15); and wherein the time required for switching between input/output paths of input/output ports is 10 ms or less (e.g., figs. 1-3, 15, 18; col. 9 line 65 to col. 10 line 13).

Thus claim 6 is met.

Helin et al. an optical switch (e.g., fig. 1) comprising: a substrate 1; an optical member 6 for reflecting light inputted; and a cantilever 5 supporting the optical member 6 over the substrate 1, the cantilever 5 having a first end fixed to the substrate and a distal end free of the substrate, the first end and distal end defining a cantilever axis (e.g., figs. 1, 6, 15); wherein the optical member is disposed so as to be able to tilt about the axis of the cantilever (fig. 15); and wherein the distal end of the cantilever is

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configured for displacement in a direction orthogonal to the axis of the cantilever (fig.

15). Thus claim 9 is met.

By the reasons and reference(s) given above each and every element of each of claims 10, 2 is taught by Helin et al. Thus claims 10, 2 are met.

**Claim 7 is rejected under 35 U.S.C. 102e as being anticipated by Lewis et al. (6512863).**

Lewis et al. teaches an optical switching device (e.g., fig. 9) comprising a plurality of input/output ports for inputting/outputting optical signals, and switching means for switching between input/output optical paths of the input/output ports (e.g., fig. 9); wherein the switching means switches between input/output optical paths of the input/output ports so as to keep an optical signal led to any of the plurality of input/output ports from traversing other input/output ports (e.g., fig. 9); wherein, when switching between input/output paths of input/output ports, crosstalk to the other input/output ports is -25 dB or better (e.g., col. 6 lines 2-10).

Thus claim 7 is met.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Claims 3, 8, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Helin et al. (6711321).**

Helin et al. teaches an optical switching device (e.g., fig. 1) comprising a plurality of input/output ports for inputting/outputting optical signals, and switching means for switching between input/output optical paths of the input/output ports (e.g., figs. 1-3, 15); wherein the switching means switches between input/output optical paths of the input/output ports so as to keep an optical signal led to any of the plurality of input/output ports from traversing other input/output ports (e.g., figs. 1-3, 15); and wherein the time required for switching between input/output paths of input/output ports is 10 ms or less (e.g., figs. 1-3, 15, 18; col. 9 line 65 to col. 10 line 13).

Helin et al. an optical switch (e.g., fig. 1) comprising: a substrate 1; an optical member 6 for reflecting light inputted; and a cantilever 5 supporting the optical member 6 over the substrate 1, the cantilever 5 having a first end fixed to the substrate and a distal end free of the substrate, the first end and distal end defining a cantilever axis (e.g., figs. 1, 6, 15); wherein the optical member is disposed so as to be able to tilt about

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the axis of the cantilever (fig. 15); and wherein the distal end of the cantilever is configured for displacement in a direction orthogonal to the axis of the cantilever (fig. 15).

By the reasons and reference(s) given above each and every element of each of claims 10, 2 is taught by Helin et al.

Although Helin et al. does not expressly state “demultiplexer” and “wherein the switch comprises a plurality of reflective optical members corresponding to respective signal light components demultiplexed into the individual wavelengths”, it would have been obvious to do so because Helin et al. does teach a matrix switch (e.g., col. 1 lines 20-31; col. 8 lines 35-40) and it is conventionally known to use switch mirrors such as those of Helin et al. in a matrix switch with a demultiplexer wherein the switch comprises a plurality of reflective optical members corresponding to respective signal light components demultiplexed into the individual wavelengths.

One of ordinary skill would have been motivated to make a matrix switch of Helin et al. with a demultiplexer wherein the switch comprises a plurality of reflective optical members corresponding to respective signal light components demultiplexed into the individual wavelengths for the purpose of creating a dynamically reformable, high density, wavelength division multiplex optical transmission system.

Thus claim 3 is rejected.

Regarding claim 12, the matrix described above with respect to claim 3 would have a “plurality of cantilevers corresponding, respectively, to the plurality of reflective

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optical members" because a plurality of cantilevers must be contained in a matrix of Helin et al.'s switches. Thus claim 12 is rejected.

By the reasons and references given above, each and every element of claim 8 is at least rendered obvious by Helin et al. Thus claim 8 is rejected.

**Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weaver et al. (6647164).**

Weaver et al., by figs. 1-2 and 10 and/or conventionally known principles in the art, renders as obvious each and every element of each of method claims 13-15. If Applicant disagrees with this obviousness holding regarding method claims 13-15, then Applicant should either amend the method claims 13-15 to include what has been indicated as allowable subject matter or submit evidence showing this obviousness holding is errant. Examiner will consider restricting if applicant chooses the latter.

Thus claims 13-15 are rejected.

#### ***Allowable Subject Matter***

Claims 5, 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art, either alone or in combination, does not disclose or render obvious a first electrode, disposed on the substrate, for tilting the optical member about the axis



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of the cantilever; and a second electrode, disposed on the substrate, for flexing the cantilever toward the substrate as stated in claim 5.

It is noted that the claims 5 is allowable because the unique combination of each and every specific element stated in the claim.

The prior art, either alone or in combination, does not disclose or render obvious a first electrode, disposed on the substrate proximate the intermediate portion of the cantilever, for tilting the optical member about the axis of the cantilever; and a second electrode, disposed on the substrate proximate the distal end, for displacing the distal end of the cantilever toward the substrate as stated in claim 11.

It is noted that the claims 11 is allowable because the unique combination of each and every specific element stated in the claim.


### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P. Mooney whose telephone number is 571-272-2422. The examiner can normally be reached during weekdays, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-1562.

  
Michael P. Mooney  
Examiner  
Art Unit 2883

  
Frank G. Font  
Supervisory Patent Examiner  
Art Unit 2883

FGF/mpm  
2/15/06